On the merits of setting targets for pesticide use

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Summary. Concern about the impact of pesticides on human health and safety and on the environment has resulted in Sweden. Denmark and the Netherlands legislating for targetted reductions in pesticide use. Several other countries have established voluntary programs with similar objectives. Whilst public concerns in Australia are much less (reflecting our less intensive use of pesticides) there is a need for Australia to maintain access to overseas markets. The National Strategy for Ecologically Sustainable Development calls oft-governments to assess the merits of setting indicative national targets for the use of selected agricultural and veterinary chemicals. Objective assessment of the merits of such action requires that the benefits be weighed against the costs. Whatever course is adopted. the aim should be to provide substantial national advantage.

Benefits of reducing pesticide use

For governments to provide objective assessment of the merits of setting targets for pesticide use, the benefits will need to be weighed against the costs. Benefits from reduced use of pesticides may be assessed in terms of

- improvements in economic productivity;
- retention of existing access to overseas markets and/or access to new markets that are now closed to Australian products because of pesticide residues;
- enhanced capacity to control pests by retaining chemicals that might otherwise be lost by emerging resistance in pests to pesticides;
- development and adoption of alternative means of pest control (eg plant breeding);
- reduced emissions into the environment;
- enhanced innovative capacity for Australian agriculture;
- reduced risk to agricultural workers.

A frequent argument for reducing pesticide use is the need to minimise risks to consumers. While maximum residue limits for pesticides in food are set at several orders of magnitude below levels that are assessed as being harmful, in practice there is no ready answer to consumer concern about any level of residues. Consequently, there are important benefits to be gained from reinforcing consumer confidence by reducing pesticide use.

International Initiatives To Reduce Pesticide Use

There is a worldwide trend to greater regulation of pesticide use involving, among other things, frequent reviews of registered products and the introduction of progressively more rigorous criteria for assessing the impact of pesticides on the environment. These developments have led to the withdrawal of significant numbers of chemicals from use. For other products, registered uses have been severely restricted. The level of community concern about pesticides was so great that governments in Sweden, Denmark and the Netherlands legislated to reduce their use. (Details of these programs can be found in a variety of sources. a particularly useful one being the World Wide Fund for Nature's review (7)). Italy's central government and regional authorities have adopted an integrated plan that is expected to lead to a reduction of 30-50% in the use of pesticides although no firm targets have been set (8). Norway is relying on industry to adopt a responsible attitude in order to reduce pesticide use to a level that is *agriculturally defensible (12).* Finland also has a voluntary program in place with an initial objective to reduce pesticide use by 50% by 1995, taking 1991 use of 0.8kg (a.i.)/hectare as a starting point (9).

The Commonwealth Government's Working Party that reported on ecologically sustainable development in the agricultural sector (1,2) recognised the concerns expressed by different interest groups about pesticides. The Working Party rejected the idea that Australia should follow the approach adopted by the

Netherlands, and recommended instead *that targets be set for reductions in use of specific classes of chemicals as a means of encouraging the development of alternatives and ensuring that Australia is in a position to meet changing market requirements for its agricultural products (2).* This advice was taken up in the National Strategy for Ecologically Sustainable Development (1992) where it was agreed that *Australian Governments will assess the merits of setting indicative national targets for the use of selected agricultural and veterinary chemicals.*

An analysis of the issues leading to this commitment has been made by Evans *et al (6).* They argued that agricultural and veterinary scientists from all disciplines should become involved in order that the final outcome provides substantial national advantage for Australia, whatever approach is adopted.

A role for agricultural scientists

There is a risk that rational and informed debate on the merits of setting targets could be curtailed because of a view that our agricultural industries are already using pesticides efficiently and a perception that gains made in the Swedish and Danish programs are illusory. In discussions on the matter of setting targets, the argument is frequently advanced that the intensive agriculture of the Netherlands is so different from the low input, extensive agricultural enterprises in Australia that the Dutch initiatives are not relevant to this country.

Conceptual difficulties do arise with the Swedish and Danish programs calling for a reduction in aggregate use, particularly when partial achievement of the targets stems from industry substitution of chemicals of relatively low activity with newer products of much higher biological activity. However, the Scandinavian and Dutch programs arc so bold in their conception that they are deserving of thorough analysis by every scientist concerned with pesticide use in our rural industries. The idea that Australian agriculture already uses_pesticides efficiently is complacent and ill-behoves a country that is heavily dependent on exports of agricultural commodities and seeking to improve this performance through its promotion of a clean, green image. To dismiss the notion that there is any relevance in comparing the use of pesticides in Europe with the situation in Australia reflects a failure to understand that differences are more a matter of degree, rather than kind.

Retrospective analyses of the European programs are now beginning to emerge. These reveal a number of key messages that Australia cannot afford to ignore, including:

- the depth of community concern over potential impacts of pesticides on human health and the environment;
- a level of concern even where residues do not exceed established limits;
- an emerging political climate in which governments will initiate action;
- widespread overuse and misuse of pesticides;
- the potential for significant reductions in pesticide use without recourse to legislation; action plans are required for initiatives to improve the efficiency of pesticide use; farmers will cooperate to reduce pesticide use; and
- pesticide use can be reduced very significantly without impairing economic productivity.

Pettersson (10) summarised the situation and concluded that so far, the new pesticide policy in Sweden may be described more as an adaptation to what is technically and economically possible rather than a break in the trend [to increased pesticide use].

Other considerations

Farmers and their representative bodies are naturally apprehensive about setting targets for reducing pesticide use fearing lost production and downgrading of produce. These are perfectly reasonable concerns that have to be addressed within any program for reducing pesticide use. One response to these concerns is a reckoning by Dutch scientists that pesticide use could be cut to one-tenth of current levels by adopting fully integrated systems of agriculture (3). Scientists working on the Boxworth project concluded that *very high inputs of crop protection chemicals are unlikely to be required in a well-managed crop, and prophylactic use is not likely to bestow any additional benefits (5).*

Clearly benefits of reduction programs will not come without costs involving, *inter alia,* additional research and extension, the funding for which would have to come from within existing resources, thus reducing funding into other areas. Another cost would be the need to establish facilities and provide resources for educating and training farmers and other rural workers. Monitoring progress towards achieving targets would also require resources, as would setting of base line data by which to judge performance.

Consumers have come to demand blemish-free produce and this is seen to be an impediment to reducing pesticide use. The Italians have recognised the dilema and include in their program a campaign to educate consumers to accept minor blemishes rather than downgrading or rejecting produce (8). Grading of produce is a concern for countries within the EEC and for those trading with member countries where standards are seen as a barrier to more efficient pesticide use (11).

Increased herbicide use in minimum tillage and no-till systems that have been adopted in response to concern about land degradation, and the emphasis being given to breeding herbicide resistant crops, will require careful analysis and debate. The potential benefits of these practices must be balanced against concern about the increased use of herbicides.

Perhaps the least talked about benefits to flow from a commitment to reduce pesticide use is the potential to keep Australian agriculture at the forefront of change by fostering the development of innovative capacity in our farmers and scientists; something on which we have always prided ourselves. The possibilities have not been lost on the Dutch.

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